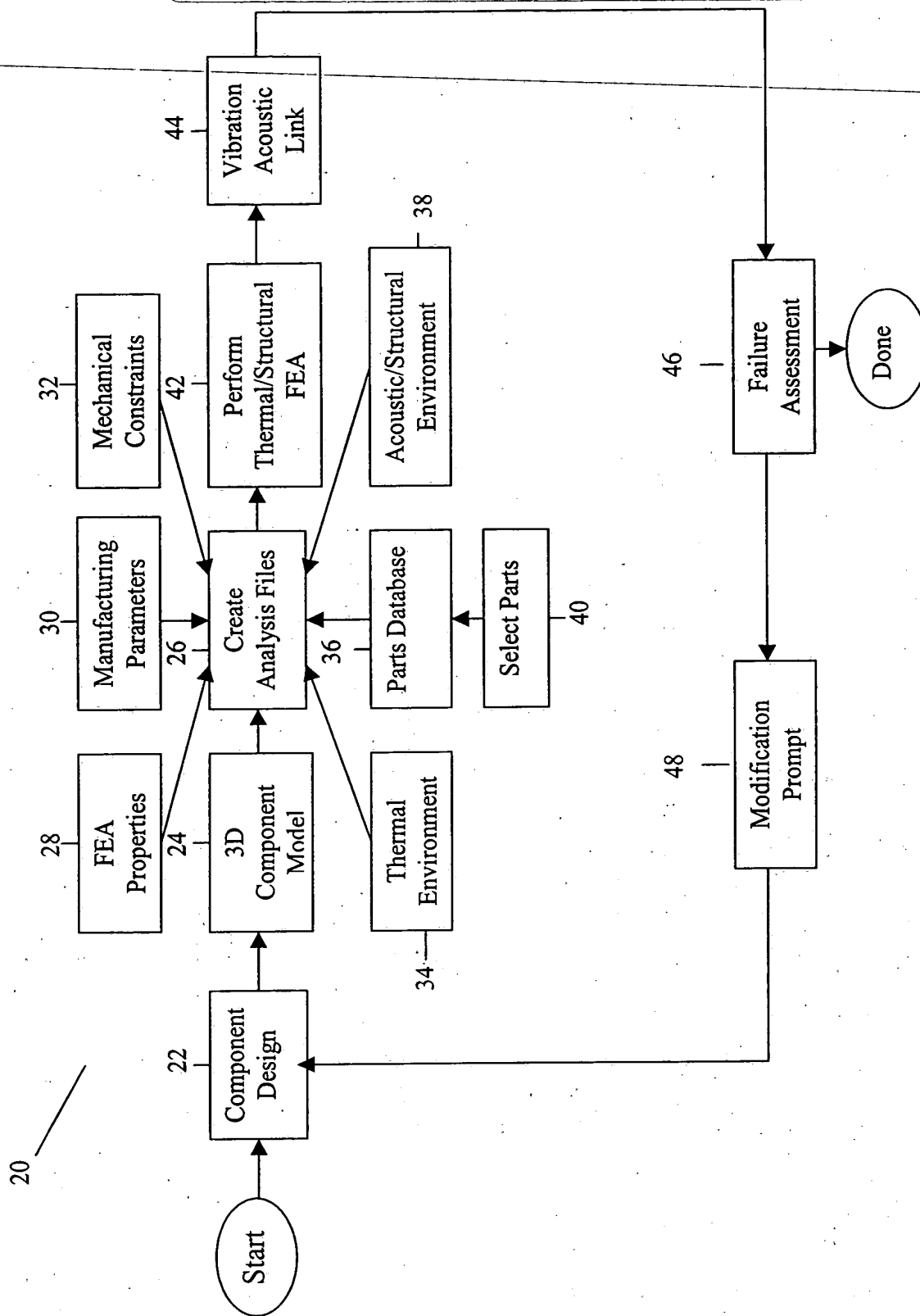


FIG. 1.



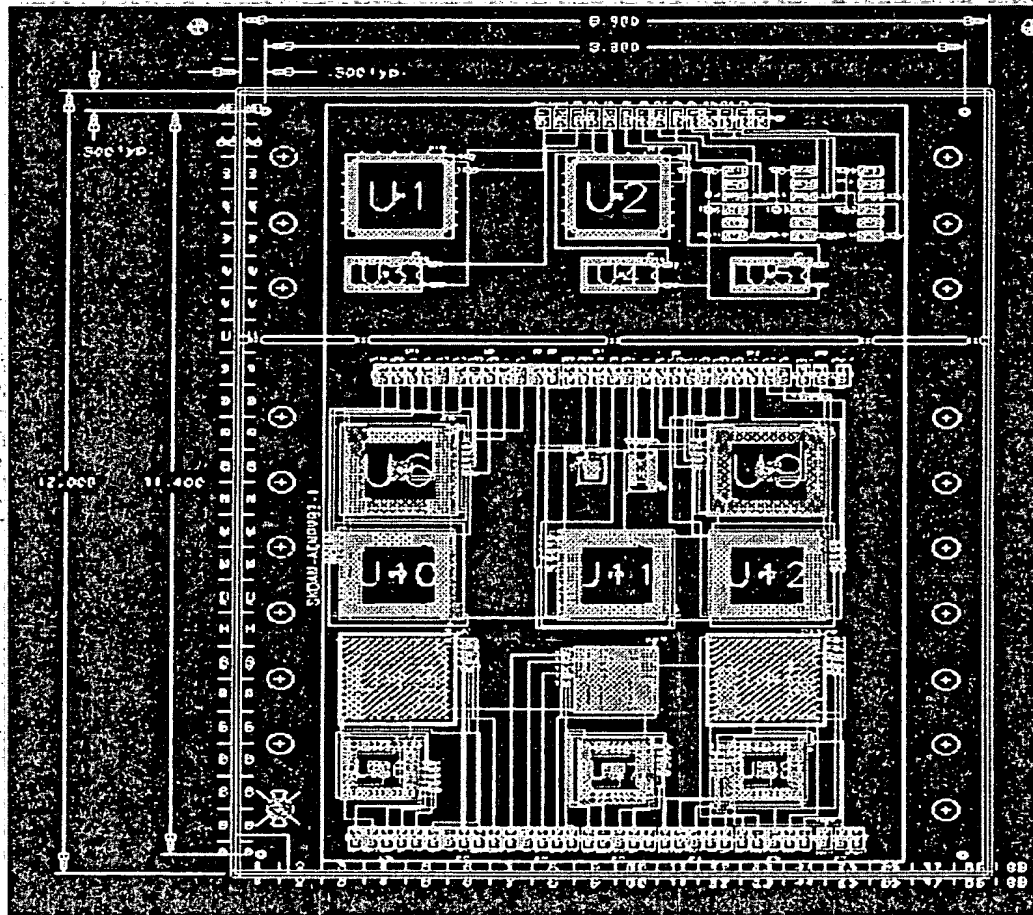
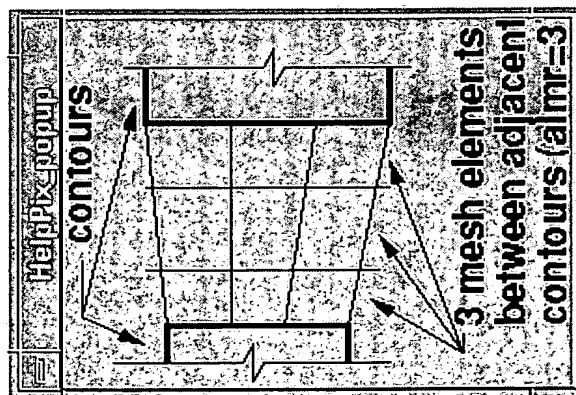


FIG. 2.

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Figure 3



Help for selected field

Mentor Files

Part Geometry ☐ Show Help ☒ Mesh Properties ☒ Material Properties

Target Mesh Size (ms)   
Minimum Component Area (ma)   
☒ Use Bounding Boxes Instead of Actual Geometry (ue)

Mesh Geometry ☒ Scale Properties to Target Mesh Size

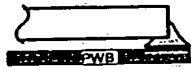
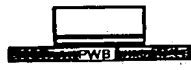
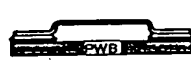


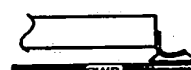
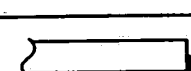
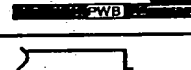

Number of Subdivisions of Line Segments (lmsr)   
Number of Mesh Subdivisions between Parallel Lines (almsr)   
Maximum line segment length (lc)   
Chamfer Threshold (dcc)   
Minimum Vertices for Contours (polygons) (st)   
Minimum Chord Length for Arc Idealization (sc)   
Parallel Line Discrimination Distance (plmc)   
Point Discrimination Distance - COVER (scic)   
Point Discrimination Distance - PWB (dsic)

Mentor Resolution (e)

Adjacent contours within a distance of "almsr" will be considered when constructing the mesh for a contour.

Cancel Apply Reset to Defaults

**FIG. 4.**

	Durability Module	Description	Configuration
	CCC	Leadless chip component	
54 —	DIO	Planar-diode package	
52 —	IND	Inductor feedthrough foil	
58 {	Hybrid-GW	Gull wing	
	Hybrid-SGW	Spider gull wing	
56 {	L-lead	L-leaded component	
	J-lead	J-leaded component	
	PTH	Plated-through-hole component	
59 —	PBGA	Plastic ball grid arrays	

2023-04-14 14:00:00

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Durability Part Number Table					
Part Number	Package Name	Lead Style Name	Lead Material Name		
172908-00K	313 BGA Package 100mil pitch				
173332-00P	T11-TS0F-54-10x22mm HVBRID-002K		CU		
173334-11J	pgfp 208-le HYBRID-024		CU		
173370-00L	360 CBGA Package				
173446-00K	388 BGA Package				
280-10020-101	280-10020-101				
280-10025-101	280-10025-101				
280-10025-102	280-10025-102				
280-10025-103	280-10025-103				
280-10025-104	280-10025-104				

BGA Package Table							
Package Name	Substrate	Length	Substrate Width	Balls	Thrm Balls	X	Y
144 BGA Package	U-512	U-512	144	144	0	0	0
144 BGA Package	U-512	U-512	144	144	0	0	0
313 BGA Package 100mil pitch	1.380	1.380	169	169	0	0	1
313 BGA Package 50mil pitch	1.380	1.380	625	625	0	0	0
324 BGA Package	0.906	0.906	324	324	6	6	0
352 BGA Package	1.378	1.378	352	352	0	0	0
360 CBGA Package	0.980	0.980	361	361	0	0	0
388 BGA Package	1.378	1.378	388	388	6	6	12
Dummy BGA Package	0.512	0.512	144	144	12	12	0
1741pbga-225f-025	1.180	1.180	225	225	0	0	0

FIG. 5.



202F20" 4 Feb 2007

Durability Part Number Table									
Part Number	Package Name	Lead Style Name	Lead Material Name						
172908-00K	313 BGA Package 100mil pitch								
173332-00P	111-TSOP-54 10x22mm	HYBRID-002k	CU						
173334-11J	36FP-208 1e	HYBRID-024	CU						
173370-00L	36U CPGA Package								
173446-00K	388 BGA Package								
280-10020-101	280-10020-101								
280-10025-101	280-10025-101								
280-10025-102	280-10025-102								
280-10025-103	280-10025-103								
280-10025-104	280-10025-104								
280-10025-105	280-10025-105								

Lead Geometry Table									
Lead Style Name	S1	S2	S3	RHO	R1	R2	IE	HA	TI
900-14695-fg1	0.000	0.030	0.000	0.000	0.000	0.013	0.000	0.047	0.015
HYBRID-001	0.005	0.080	0.008	0.000	0.750	0.550	0.008	0.008	0.010
HYBRID-002	0.020	0.030	0.035	0.000	0.005	0.005	0.105	0.105	0.007
HYBRID-002a	0.025	0.030	0.055	0.000	0.005	0.005	0.000	0.057	0.010
HYBRID-002b	0.010	0.030	0.056	0.000	0.003	0.005	0.000	0.035	0.006
HYBRID-002c	0.000	0.006	0.021	0.000	0.005	0.005	0.000	0.040	0.004
HYBRID-002d	0.000	0.006	0.021	0.000	0.001	0.001	0.000	0.050	0.011
HYBRID-002e	0.016	0.013	0.051	0.000	0.005	0.005	0.000	0.072	0.004
HYBRID-002f	0.037	0.012	0.071	0.000	0.006	0.006	0.000	0.063	0.005
HYBRID-002g	0.008	0.019	0.041	0.000	0.005	0.005	0.000	0.029	0.009
HYBRID-002h	0.007	0.026	0.052	0.000	0.005	0.005	0.000	0.076	0.009
HYBRID-002i	0.000	0.040	0.060	0.000	0.005	0.005	0.000	0.030	0.010
HYBRID-002j	0.000	0.040	0.060	0.000	0.005	0.005	0.000	0.050	0.014
HYBRID-002k	0.001	0.020	0.031	0.000	0.005	0.005	0.000	0.028	0.006
HYBRID-003	0.030	0.040	0.120	0.000	0.020	0.020	0.050	0.050	0.010
HYBRID-004	0.030	0.040	0.120	0.000	0.020	0.020	0.050	0.050	0.010
HYBRID-005	0.030	0.040	0.120	0.000	0.020	0.020	0.060	0.060	0.010
HYBRID-006	0.030	0.040	0.150	0.000	0.020	0.020	0.040	0.040	0.010
HYBRID-007	0.030	0.060	0.140	0.000	0.020	0.020	0.200	0.200	0.009

FIG. 6.

202120" 415442001

Title: Method, System and Computer Program Product for  
Multidisciplinary Design Analysis of Structural Components  
Inventor: Mostafa Rassaian  
Applicant: To be assigned  
Atty Dkt No: 38190/235695

Part Number

Package Name

Lead Style Name

Lead Material Name

172308-00K

313 BGA Package 100mil pitch

173332-00P

T11 TSOP-54 10x22mm

HYBRID-002K

CU

173334-11J

Pqfp 208 1e

HYBRID-024

CU

173346-00K

388 BGA Package

280-10020-101

280-10025-101

280-10025-102

280-10025-103

280-10025-104

280-10025-105

Material Table

Name

Exp Coef

Density

Heat Capacity

Poisson

Shear Mod

Therm Cond

Strength

Young Mod

163SN37PB

21.400

8378.00

214.000

0.370

31280

51.000

3880.000

5.600

ABLEBOND8360

45.000

3400.00

1000.000

0.350

300.000

2.900

2000.000

10.722

AL

21.600

2712.00

920.000

0.330

7600

161.000

38000.000

10.600

ALBOMET

13.900

2100.00

1926.000

0.140

11.400

296.000

55000.000

26.000

ALB POLY

13.980

1806.00

1514.000

0.210

61920

164.580

32280.000

6.500

ALHONEY

21.600

500.00

920.000

0.330

25440

29.000

38000.000

6.300

ALUMINA

7.100

3847.00

960.000

0.220

25.600

27.600

28450.000

40.000

AU

19.200

19400.00

127.000

0.420

31980

315.000

14900.000

11.310

AUSN

15.900

14510.00

163.000

0.300

37300

57.000

40000.000

8.600

BRAZE

21.600

244.00

990.000

0.330

20.000

14.500

10000.000

5.300

BT LAMINATE

15.000

1435.00

1135.000

0.300

11330

40.310

3880.000

2.460

CER-A

16.000

3847.00

960.000

0.220

16390

27.600

28450.000

40.000

CER-B

9.000

2800.00

800.000

0.300

16390

0.900

28450.000

40.000

CER-C

11.000

2800.00

800.000

0.300

16390

0.900

28450.000

40.000

CER-D

6.500

3847.00

960.000

0.220

25.600

27.600

28450.000

40.000

CER-E

6.000

3847.00

960.000

0.220

25.600

27.600

28450.000

40.000

CER-F

9.000

2800.00

800.000

0.300

16390

0.900

28450.000

40.000

CER-G

11.000

2800.00

800.000

0.300

16390

0.900

28450.000

40.000

CER-H

6.500

3847.00

960.000

0.220

25.600

27.600

28450.000

40.000

New

Copy

Delete

OK

Reset

Cancel

FIG. 7.

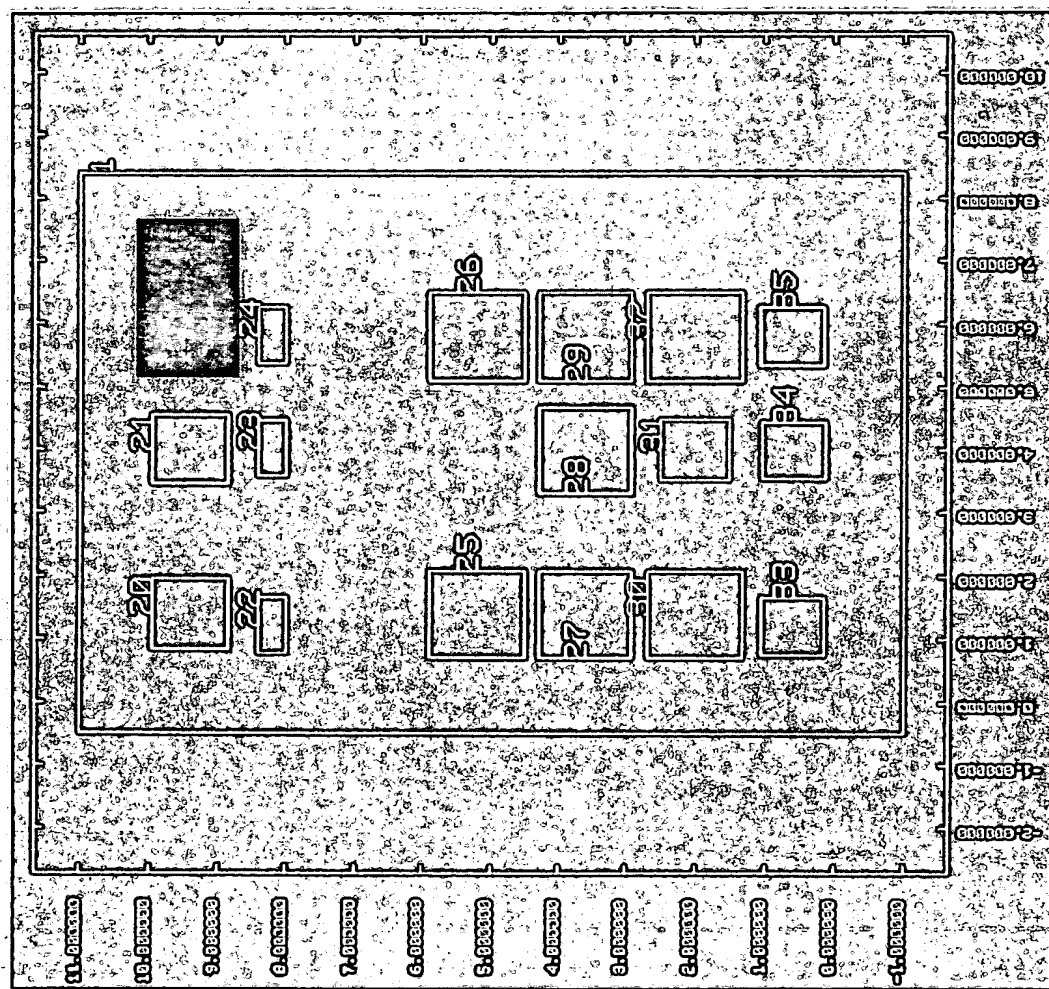
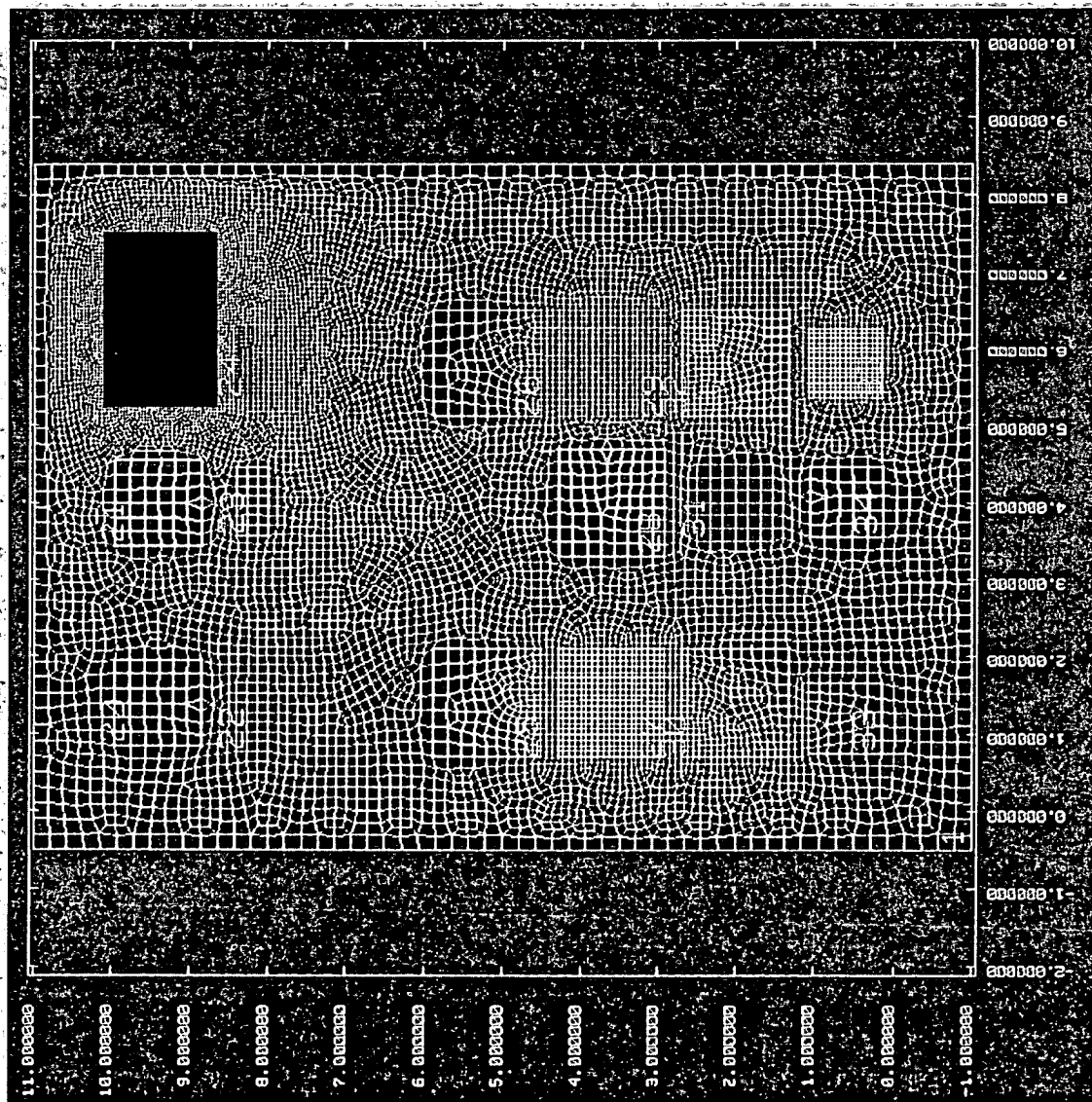


FIG. 8.

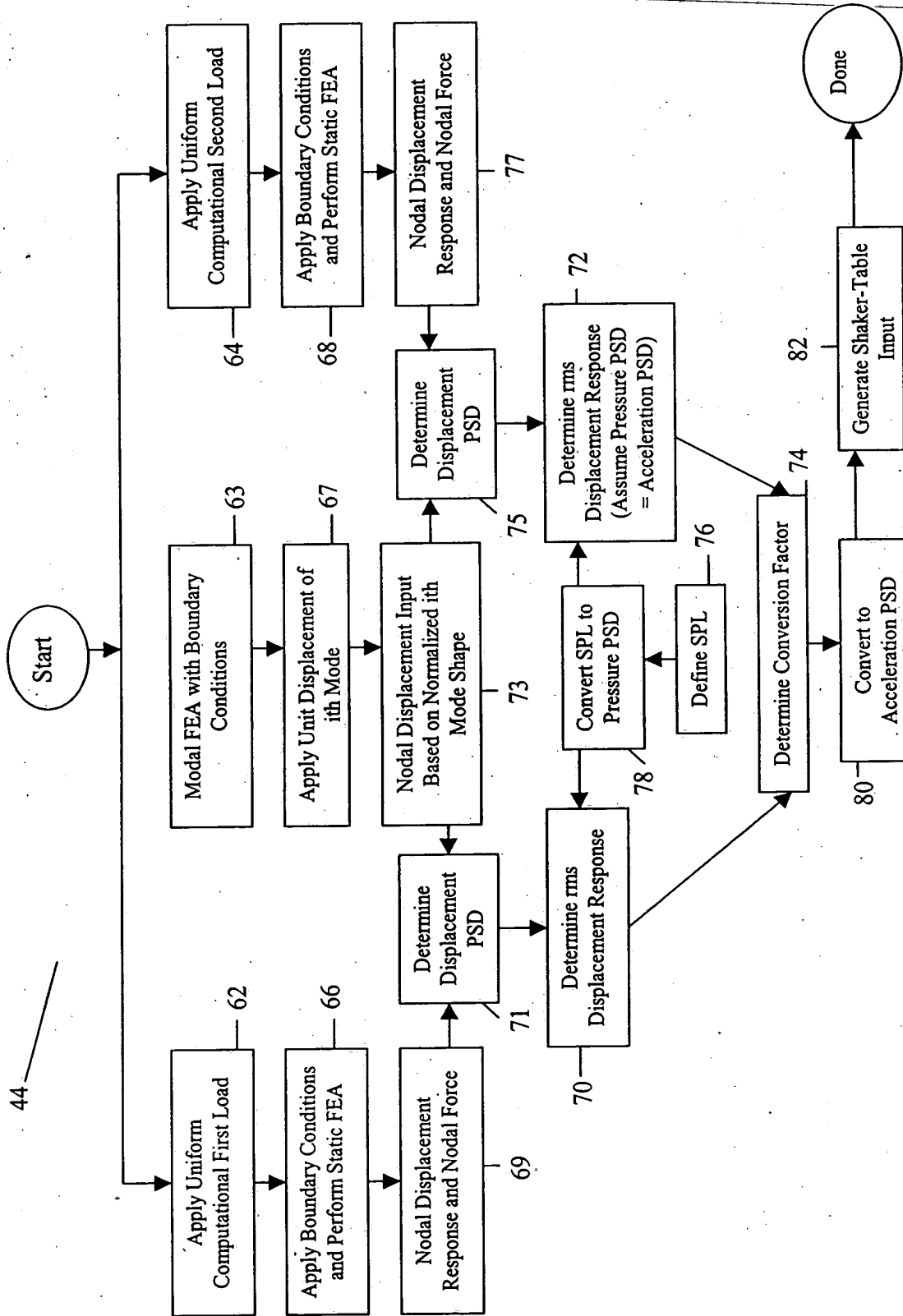




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FIG. 10.



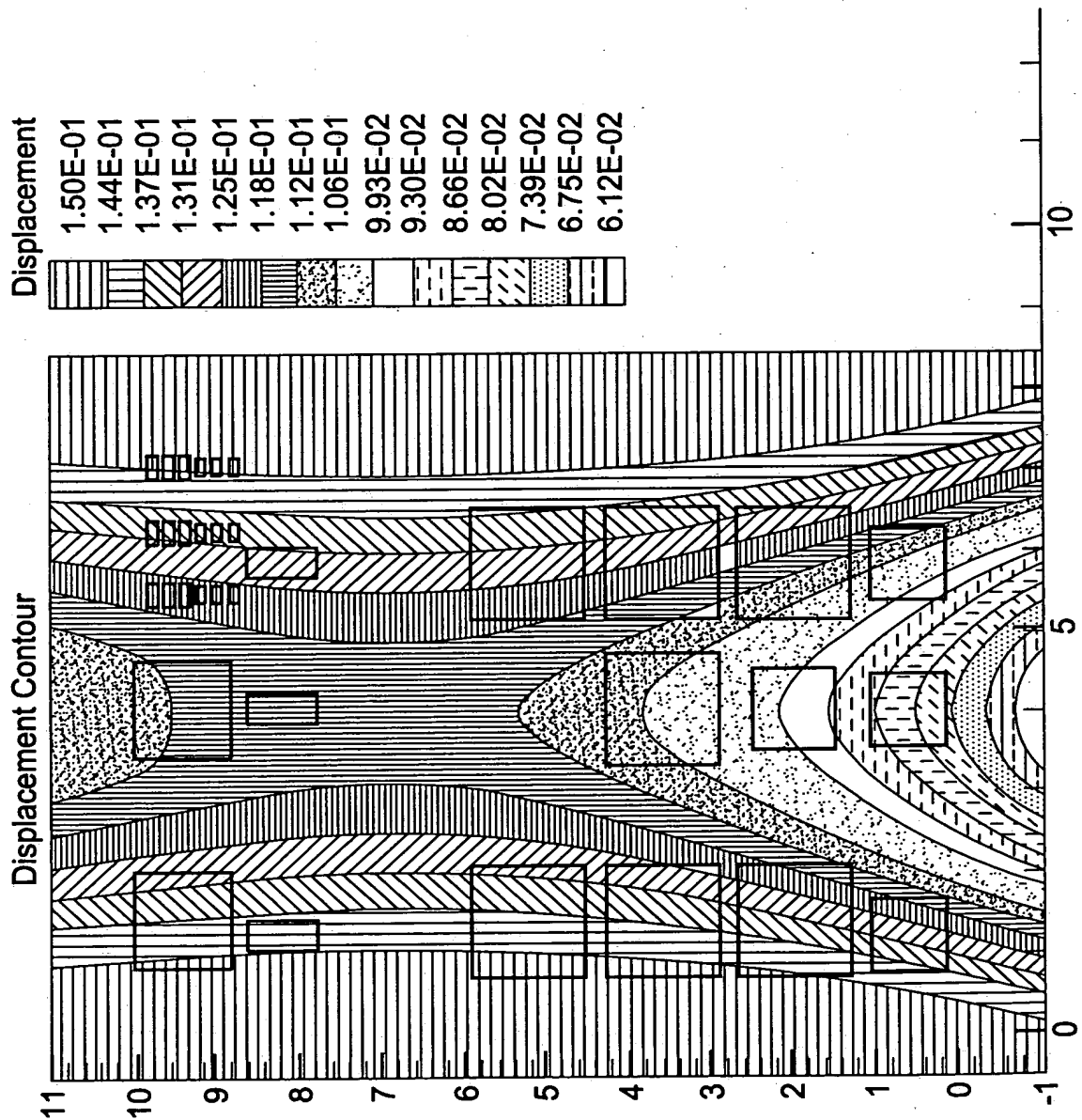
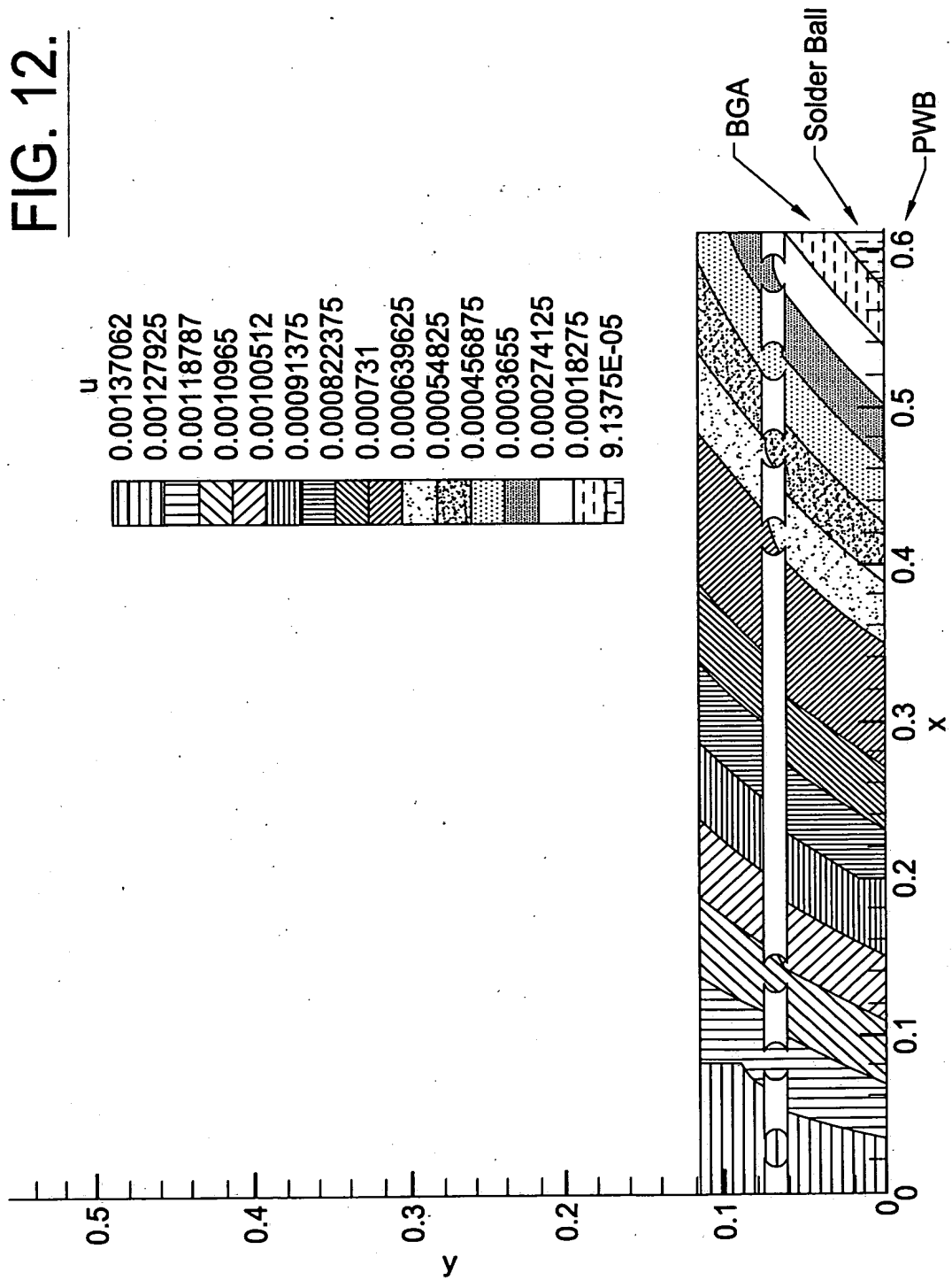


FIG. 11.

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FIG. 12.



202120141542001

Title: Method, System and Computer Program Product for  
Multidisciplinary Design Analysis of Structural Components  
Author(s): Mostafa Rassaian  
Application No: To be assigned  
Atty Dkt No: 38190/235695

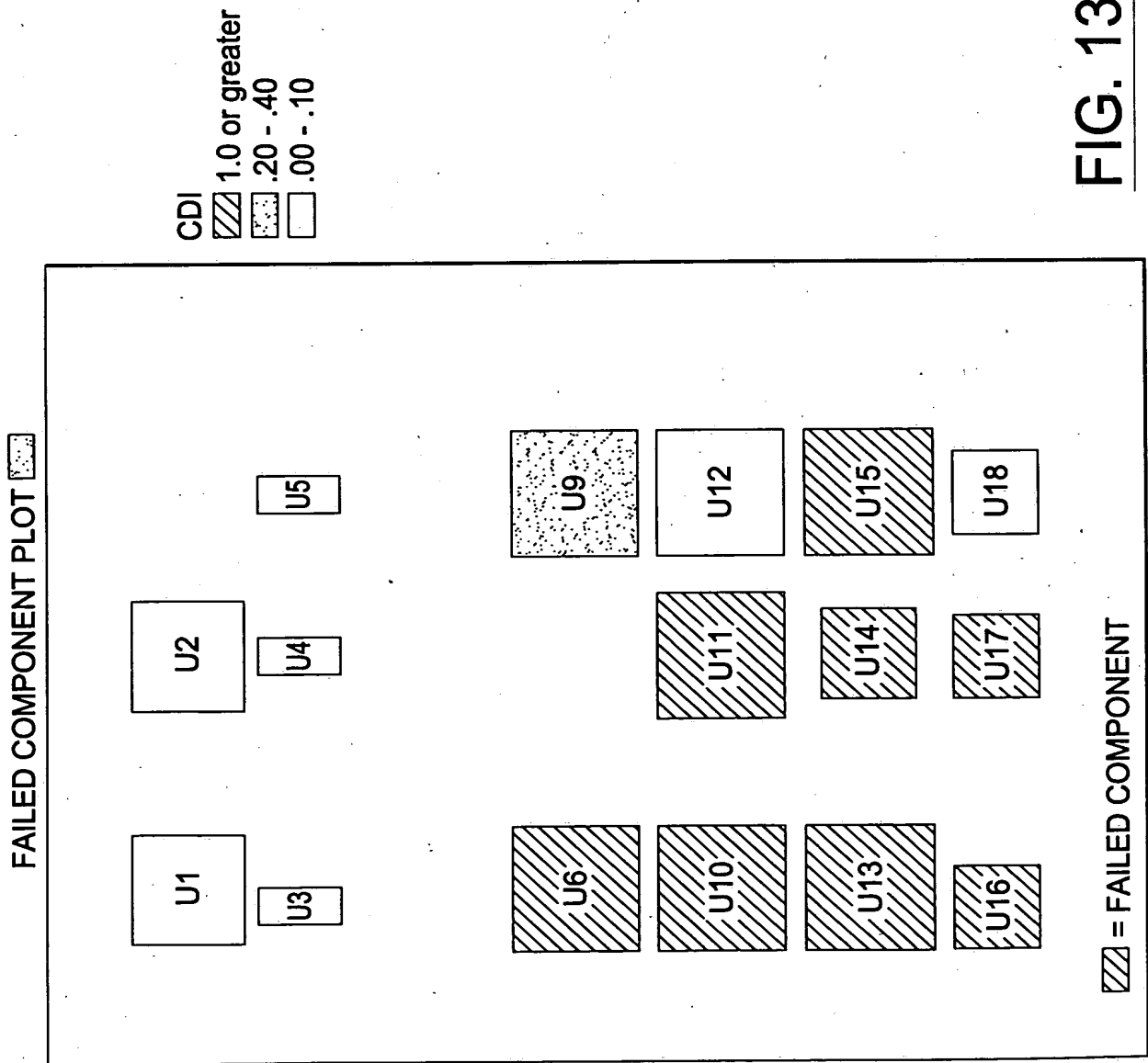


FIG. 13.